

Why do people live in areas of tectonic activity?

Teaching notes

Starter

Students will need to have a map of key tectonic activity from previous lessons. If they do not, then reference to one will be needed. Two examples are provided on the next page. The first example, showing earthquake epicentres 1963 to 1998, is available at http://en.wikipedia.org/wiki/File:Quake_epicenters_1963-98.png and the second, a world map of active volcanoes and plate boundaries, is available at http://vulcan.wr.usgs.gov/Glossary/PlateTectonics/Maps/map_plate_tectonics_world.html. A black and white version of the second map is also available on this webpage.

Place a population distribution map on the board, for example:

http://www.populationlabs.com/maps/World_Population_Map.png.

In pairs, students have to decide which area of the world has the highest number of people potentially affected by tectonic activity.

For those who make a quick decision, additional questions can be asked, such as whether they can explain why an area which has a high number of people living there and clearly is at risk from tectonic activity may not actually have the highest number of deaths caused by tectonic activity.

Main activity

1. The students are provided with cards with reasons why people still live in tectonically active areas.
2. There are spare cards in the pack for the students to add their own reasons. Alternatively, students can be given only blank cards to start with, and think of some reasons themselves.
3. The students need to place the cards onto the pyramid according to where they feel are most appropriate. The pyramid can be photocopied or else the students can draw their own version on a sheet of blank A3 paper.
4. Additional judgements can be made, for example the teacher might suggest that cards which the student believes are very influential in a person's decision to live in a tectonically active area be placed nearer the centre of the pyramid. Students could also be asked to consider which cards relate more to MEDCs than LEDCs.
5. The students use their results to fill in the column of the table 'reasons'.
6. Students can be given the factsheet, or use their own notes, to fill out the 'examples' column of the table. Internet research is obviously possible at this point.

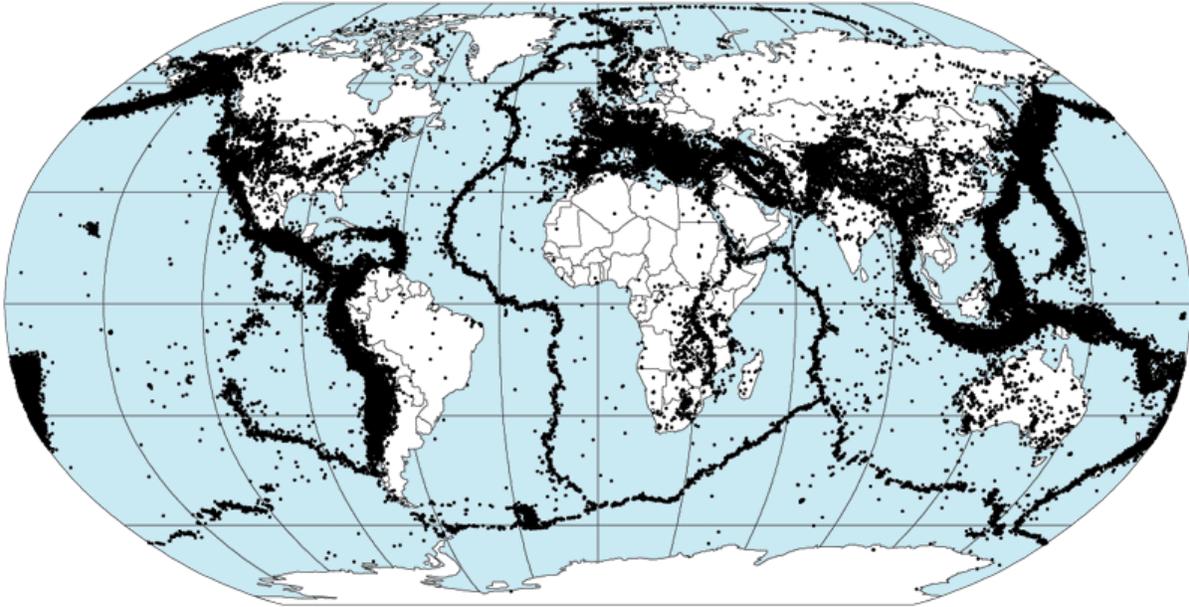
Plenary

Students are to complete a question selected from below:

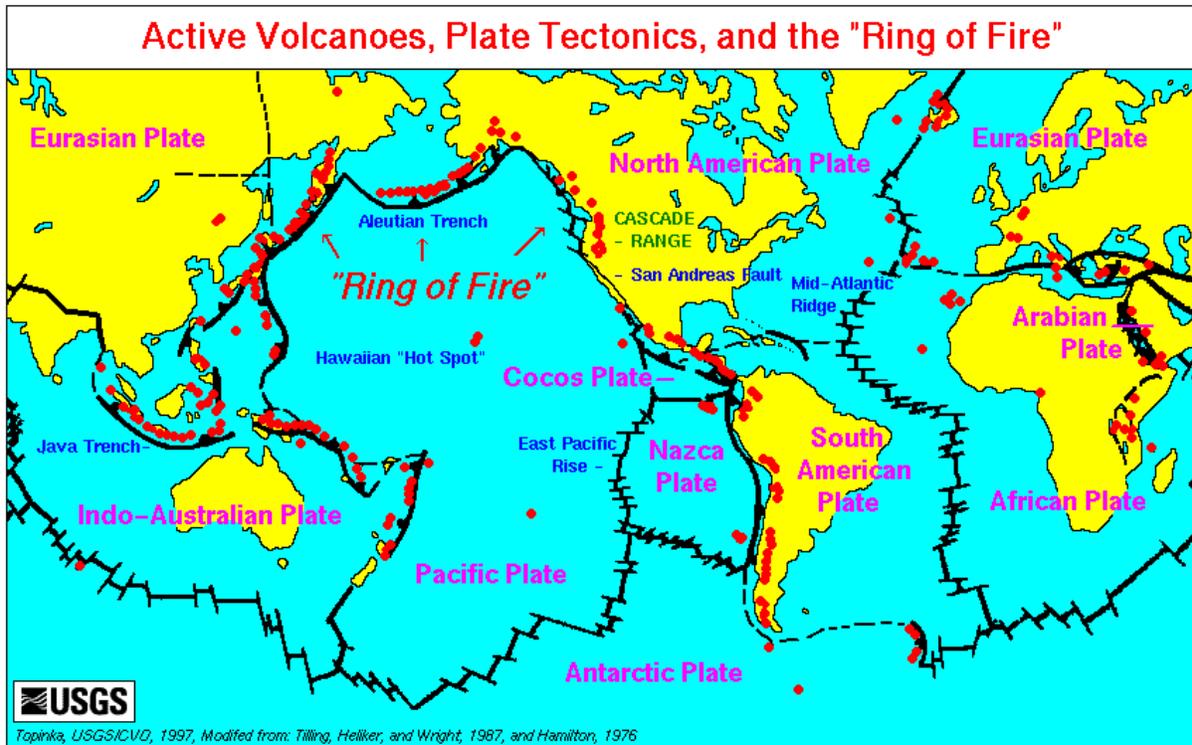
- Explain why people continue to live in areas of tectonic activity.
- Roland wants to move with his family to the foothills of an active volcano. Suggest the reasons why he wants to do this.

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Preliminary Determination of Epicenters 358,214 Events, 1963 - 1998



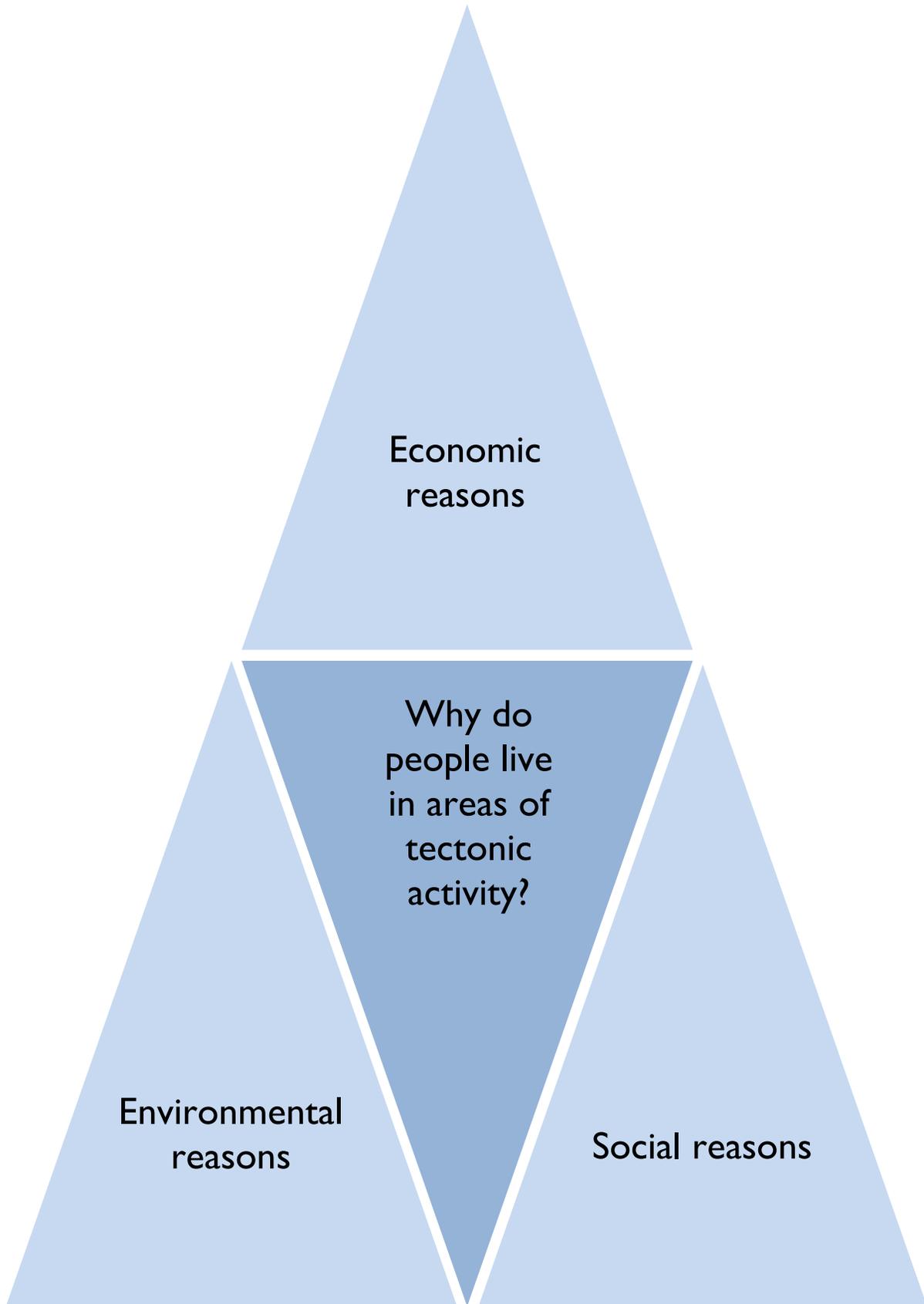
© NASA 1998 <http://denali.gsfc.nasa.gov/dtam/seismic/>.



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http://vulcan.wr.usgs.gov/Glossary/PlateTectonics/Maps/map_plate_tectonics_world.html.

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Why do people live in areas of tectonic activity?

| Why do people continue to live in areas of tectonic activity? | Reasons | Examples of where this happens |
|--|----------------|---------------------------------------|
| Economic reasons | | |
| Environmental reasons | | |
| Social reasons | | |

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|--|--|---|--|
| Some volcanoes attract many tourists and so provide jobs for locals. | People may think that the actual chance of something happening is very low. | Cheap geothermal energy can be generated from the tectonic activity. | Valuable minerals are found near to volcanoes, and so people gain employment working in the mines. |
| People may not be able to afford to live elsewhere. | Families have lived in the area for years, and little tectonic activity has happened. The community is more important than any risk. | People can feel safe now buildings are designed with earthquakes/volcanoes in mind. | The soils near volcanoes are very fertile. |
| People think that there are adequate warnings and evacuation methods in place so they won't be harmed. | Housing is cheaper in some of these areas. | Communities have built up around the volcano because of the tourism potential. | People don't want to leave their friends and family. |
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Factsheet

- Today around 500 million people live on or close to volcanoes.
- Mount Etna in Sicily, Italy, attracts many tourists from around Europe and further afield.
- In the Napa Valley of California, the volcanic soils have a high mineral content and are very good for producing fine quality wines.
- In Iceland, many heating systems and outdoor swimming pools use geothermal energy generated from tectonic activity.
- Columbia is known to be one of the best places to grow coffee because of the quality of the volcanic soil.
- Buildings in Japan have to now be built using earthquake proof methods.
- The Pacific Tsunami Warning Centre in Hawaii issues tsunami warnings for most of the Pacific Ocean.
- In China, poverty prevents many people migrating to Eastern China for better paid jobs.
- In California, many people buy earthquake insurance to provide protection against losses resulting from earthquakes.
- Existing buildings can be modified by 'seismic retrofitting' to make them more resistant to seismic activity.